

Valley National Park. A major portion of the Park is covered by glaciers, etc. which may not be considered as ibex habitat. The total population of ibex in the Park could be between 700 and 1200 animals.

Recommendations: This population estimation exercise must be used as benchmark data by future Wildlife managers. The influence of grazing by migratory sheep and goats should be investigated further. A management prescription has been proposed that involves a grazing closure programme that will lead to total elimination of grazing in all the major pastures inside the National Park (Pandey 1990). It is recommended that these results be verified in similar

weather conditions in November over a period of at least five years so that direct comparison can be made between counts associated with the grazing reduction.

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3. ON RARE CETACEAN SPECIES OFF SRI LANKA, INCLUDING THE KILLER WHALE *ORCINUS ORCA* (LINN.) (DELPHINIDAE : CETACEA)

An impetus to the study of Cetaceans off Sri Lanka was given by the declaration in 1979 of the northern portion of the Indian Ocean (20° 130' E, and above 55° S) as a marine mammal sanctuary at a meeting of the International Whaling Commission (IWC). This was followed by a three-year study (1982-1984) of the large whales, specially of the sperm whale *Physeter macrocephalus* (Linnaeus) off Sri Lanka (see Alling *et al.* 1982). In addition, observations were made on small cetaceans. Alling (1985) examined the fishery by-catch at the fishery harbours of Beruwala (south coast) and Valaichenai and Trincomalee (east coast).

The Marine Mammal Programme of the National Aquatic Resources Agency (NARA) continued the study of the fishery by-catch and also recorded sightings of both large and small cetaceans during off-shore cruises of 'R/v Samudra Maru' during the period 1985-1989.

During the period 1985-1989 we examined the landed catch at fishery harbours Negombo (on the west coast), Beruwala, Galle, Mirissa, Dondra, Kottogoda, Tangalle, Hambantota, Kalametiya and Kirinda (on the south coast). The number of monitoring days of the by-catch during the above period was 46 for Negombo, 44 for Beruwala, 28 for Galle, 52 for

Mirissa, 47 for Dondra, Ganadara and Kottogoda and 8 for Tangalle, Hambantota, Kalametiya and Kirinda. During this study the following rare/infrequent species were recorded in the catch:

Killer whale *Orcinus orca* (Linn.): On 8 April 1986 a female was landed at Negombo by fishermen operating a 3.50 ton fishing vessel 50 km off Negombo. It was entrapped in the nylon gillnet and measured 277.5 cm from tip of snout to fluke notch. Its tooth count was 18 for each jaw. It had the striking black and white pigmentation typical of the species. Its body was cut up to be sold while the skull was procured and given by NARA to the University of Peradeniya.

Rough-toothed dolphin *Steno bredanensis* (Lesson): Five specimens, of which:

(i) Two specimens, a male and a female at Negombo fishery harbour. The male was net-entangled in May 1987 and measured 177.5 cm. The female was harpooned in February 1988, and measured 152.5 cm.

(ii) A single animal, a male was landed at Beruwala fishery harbour in February 1988. It was net-entangled and measured 223.75 cm in total length.

(iii) Two animals, a male and a female, were

landed at Mirissa fishery harbour in October 1985 (male, 222.5 cm harpooned) and July 1985 (female, net-entangled, 206.25 cm).

The percentage frequency of this species in the total landed catch of dolphins were 2.5% at Negombo, 0.75% at Beruwala and 1.6% at Mirissa for the period 1985-1989.

Melonheaded whale *Peponocephala electra* (Gray). 15 specimens. Of these:

(i) Seven specimens, two males and five females were landed at the Negombo fishery harbour. Of them two were in July 1985 and 1988, three in August 1987 and 1988 and two in October 1988. Three animals taken were found harpooned and the remaining four were a result of net entrapment. The total length measurements were for males 217.5 cm and 202.5 cm and for 4 females 227.5 cm, 221.25 cm, 185 cm and 127.5 cm (calf) respectively. These constituted 8.8% frequency of the total catch of dolphins at Negombo for the period 1985-1989.

(ii) Five individuals, three males and two females from Beruwala fishery harbour on 13 October 1987 and 18 October 1988, all being instances of gillnet entrapments. Two males measured 212.5 cm and 221.25 cm in total length while the females had a total length of 210 cm and 228.75 cm respectively. It represented 3.7% frequency of the total landed dolphin by-catch during 1985-1989 at this fishery harbour.

(iii) Two animals, one male and one female at the Mirissa fishery harbour also in October 1985. They were both harpooned, measuring 247.5 cm (male) and 232.5 cm (female). The percentage frequency of this species out of the total catch at Mirissa during 1985-1989 was 1.6%.

(iv) One female, measuring 207.5 cm was landed at Kottegoda in October 1987. It was a case of net entanglement. This represented 1.8% frequency out of the total dolphin by-catch landed at this fishery harbour during the period 1985-1989.

Pygmy killer whale *Feresa attenuata* (Gray): Two specimens in August 1985.

(i) A female, calf, 123.75 cm in total length was landed at Beruwala. It was net-entangled. This constituted 0.75% frequency of total dolphin by-catch at this fishery harbour during 1985-1989.

(ii) A male, 212.5 cm in total length landed at Galle fishery harbour. This represented 2.5% frequency of the total dolphin by-catch at Galle during 1985-1989.

Fraser's dolphin *Lagenodelphis hosei* (Fraser).

Four individuals. Out of them:

(i) 1 male, 246.25 cm in total length was landed at Negombo fishery harbour in August 1988. It was net-entangled. This constituted 1.2% frequency of the total dolphin catch at Negombo during 1985-1989.

(ii) 3 individuals, all females, were landed at Mirissa fishery harbour. They measured 225 cm., 227.5 cm. and 232.5 cm in total length. Two animals were landed in September 1985 and the other in October 1985. All were found harpooned. The percentage frequency of the total dolphin catch at Mirissa during 1985-1989 was 2.5%.

During our study from 1985-1989 we did not observe the Irrawady dolphin, *Orcaella brevirostris* (Gray), in the fishery by-catch at any of the fishery harbours we visited and so are unable to confirm the records of Santarre and Santarre (1983) and Joseph *et al.* (1983) of this species in the Negombo fishery by-catch in 1982 and 1983.

DISCUSSION

De Silva (1987) lists 23 Cetacean species off Sri Lanka including *Orcinus orca*, *Feresa attenuata* and *Peponocephala electra*. He has based the occurrence of *Feresa attenuata* on sight records whilst the record of *Peponocephala electra* is on a skull from Palk Strait in the Calcutta Museum mentioned by Blanford (1891). *Steno bredanensis* was first observed by Alling in the fishery by-catch studies she carried out at fishery harbours, Beruwala and Valaichenai and Trincomalee (east coast). She records three females of this species, one at Beruwala on 1 October 1983 and two at Trincomalee on 25 August 1983. She also found three specimens of *Feresa attenuata* at Trincomalee on 4 March and 2 August 1985. Prematunga *et al.* (1985) refer to two individuals, a male and a female of *Steno bredanensis* landed in July 1985 and one female *Lagenodelphis hosei* in the landed catch at Trincomalee on 25 January 1984. Leatherwood (in press) also reports of a female measuring 210 cm landed at Mirissa on 9 March 1986. Neither Alling nor Prematunga *et al.* have observed *Orcinus orca* nor *Peponocephala electra* in the landed dolphin catch and the latter is recorded here for the first time in the fishery by-catch.

The first record of *Orcinus orca* is a sighting off Chilaw (North-western coast) by Holdsworth in

1872. Blandford (1891) also mentions its occurrence on the West coast. Joseph in Leatherwood (in press) reports of two entangled specimens, one at Kirinda in 1982 and the other at Kottogoda on 14 July 1983. The present record from Negombo is therefore the fourth so far reported.

It is of interest that the majority of *Peponocephala electra* have been taken in the month of October (1985, 1987 and 1988) even though these dolphins have been landed at different fishery harbours (Negombo, Beruwala, Mirissa and Kottogoda). We are unable to offer any explanation at present for this situation.

Alling (1985) attributes the mortality of dolphins in Sri Lanka mostly to entrapment in gillnets used by fishermen. However, out of a total of 26 animals discussed in the present paper 10 had been harpooned. That harpooning is a threat as serious as net entanglement is also suggested by the data we have obtained in respect of other dolphin species in the landed catch at these fishery harbours.

Mohan (1985) states that the peak season of the

occurrence of dolphins in the nets in Calicut, India, is from October to February although there were individual variations between the species. The infrequent species discussed in this paper were landed in the months of January, February, April, May, July, September and October. However, the majority of the records are during the period from October to February. We hope to analyse the data obtained on the landed catch of other dolphin species in this study in due course and the results will shed more light on the exact situation in Sri Lanka.

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4. THE FLAMINGO *PHOENICOPTERUS ROSEUS* PALLAS IN KERALA

Purathur, 55 km south of Kozhikode on the west coast of Kerala, is the point where the river Bharathapuzha enters the sea. The estuary is characterised by shallow waters and extensive sandy islets which get exposed during low tide. The river is approximately a kilometre wide towards its mouth.

The birds seen at the estuary include some species rarely seen in Kerala.

During the winter months from October to March, large numbers of shorebirds and seabirds visit the estuary and many congregate on the sandflats. Purathur is one of the largest congregating sites for